This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.-2.   (Previously Cancelled)

3.   (Cancelled Herein)

4.   (Previously Cancelled)

5.-20. (Cancelled Herein)

21.   (Previously Amended) A method of ranking the immune response of a test animal within a population of animals under stress comprising:

(a) immunizing the animals with at least one antigen at least once before the onset of the stress;

(b) measuring the antibody response of the animals to the at least one antigen at least once before the onset of the stress and at least once during the stress; and

(c) calculating a mathematical index of the antibody response, wherein the mathematical index is: y = primary antibody response, wherein

(i) y is the immune response; and

(ii) the primary response is the difference in antibody quantity at a first time point before the onset of stress and a second time point during the stress, wherein the animal is immunized at the first time point before the onset of stress;

wherein a test animal having a y value greater than about one standard deviation above the average of the y value for the population is a high immune responder.

22.-24. (Cancelled Herein)

25.-52. (Previously Cancelled)

53.   (New) The method of ranking the immune response of a test animal within a population of animals under stress according to claim 21 further comprising:

in (a) immunizing the animals with at least one antigen at least once during the stress;

in (b) measuring the antibody response of the animals to the at least one antigen at least two times during the stress; and

(c) calculating a mathematical index of the antibody response, wherein the mathematical index is: y = primary antibody response + secondary antibody response, wherein

(i) y is the immune response;

(ii) the primary response is the difference in antibody quantity at a first time point before the onset of stress and a second time point during the stress, wherein the animal is immunized at the first time point before the onset of stress; and

(iii) the secondary response is the difference in antibody quantity at a second time point during the stress and at a third time point during the stress, wherein the animal is immunized at the second time point during the stress;

wherein with animals exhibiting a negative secondary response, the secondary response is weighted with a co-efficient greater than 1, and a test animal having a y value greater than about one standard deviation above the average of the y value for the population is a high immune responder.

54.   (New) The method of ranking the immune response of a test animal within a population of animals under stress according to claim 21 further comprising:

in (a) immunizing the animals with at least one antigen at least twice during the stress;

in (b) measuring the antibody response of the animals to the at least one antigen at least three times during the stress; and

(c) calculating a mathematical index of the antibody response, wherein the mathematical index is: y = primary antibody response + secondary antibody response + tertiary antibody response, wherein

(i) y is the immune response;

(ii) the primary response is the difference in antibody quantity at a first time point before the onset of stress and a second time point during the stress, wherein the animal is immunized at the first time point before the onset of stress;

(iii) the secondary response is the difference in antibody quantity at a second time point during the stress and at a third time point during the stress, wherein the animal is immunized at the second time point during the stress; and

(iv) the tertiary response is the difference in antibody quantity at a third time point during the stress and at a fourth time point during the stress, wherein the animal is immunized at the third time point during the stress;

wherein with animals exhibiting negative secondary and/or tertiary antibody responses, the secondary and/or tertiary antibody responses are weighted with a co-efficient greater than 1, and a test animal having a y value greater than about one standard deviation above the average of the y value for the population is a high immune responder.

55. (New) The method of ranking the immune response of a test animal within a population of animals under stress according to claim 21 further comprising:

in (b) measuring the antibody response of the animals to the at least one at least four times during the stress; and

(c) calculating a mathematical index of the antibody response, wherein the mathematical index is: y = primary antibody response + secondary antibody response + tertiary antibody response + quaternary antibody response, wherein

(i) y is the immune response;

(ii) the primary response is the difference in antibody quantity at a first time point before the onset of stress and a second time point during the stress, wherein the animal is immunized at the first time point before the onset of stress;

(iii) the secondary response is the difference in antibody quantity at a second time point during the stress and at a third time point during the stress, wherein the animal is immunized at the second time point during the stress;

(iv) the tertiary response is the difference in antibody quantity at a third time point during the stress and at a fourth time point during the stress, wherein the animal is immunized at the third time point during the stress; and

(v) the quaternary response is the difference in antibody quantity at a fourth time point during the stress and at a fifth time point after the stress;

wherein with animals exhibiting negative secondary and/or tertiary antibody responses the secondary and/or tertiary antibody responses are weighted with a co-efficient greater than 1, and a test animal having a y value greater than about one standard deviation above the average of the y value for the population is a high immune responder.

56.   (New) The method according to claim 21, wherein the stress is selected from disease, weaning, castration, dehorning, branding, shipping, change in ration, social disruption, restraint, periparturition and exercise.

57.   (New) The method according to claim 21, wherein the stress is periparturition.

58.   (New) The method according to clam 21, wherein the animal is bovine.

59.   (New) The method according to claim 58, wherein the bovine is selected from a multiparous cow and a primiparous cow.

60.   (New) The method according to claim 59, wherein the bovine is a multiparous cow.

61.   (New) The method according to claim 21, wherein the antigen is selected from hen egg white lysozyme, human serum albumin, tyrosine-glutamine-alanine-lysine [SEQ ID NO::1] copolymer and ovalbumin.

62.   (New) The method according to claim 61, wherein the antigen is ovalbumin.

63.   (New) The method according to claim 61, wherein the antigen is formulated with an adjuvant selected from Freunds complete adjuvant (FCA), non-ulcerative Freunds adjuvant (NUFA), complete NUFA and *mycobacteria* cell wall extract.

64.   (New) The method according to claim 21, wherein the antigen is formulated into a vaccine.

65.   (New) The method according to claim 64, wherein the vaccine is *Escherichia coli* J5.

66.   (New) The method according to claim 21, wherein a source for measuring the antibody response is selected from the group consisting of blood and milk.

67.   (New) The method according to claim 57, wherein the measuring of the antibody response at least once before the onset of the stress is at about 8 weeks before

parturition and the measuring of the antibody response at least once during the stress is at about 3 weeks before parturition and at about parturition.

68.   (New) The method according to claim 57, wherein the measuring of the antibody response at least once before the onset of the stress is at about 8 weeks before parturition and the measuring of the antibody response at least once during the stress is at about 3 weeks before parturition, at about parturition and at about 3 weeks after parturition.

69.   (New) The method according to claim 57, wherein the immunizing the animals at least once before the onset of the stress is at about 8 weeks before parturition and the immunizing the animals at least once during the stress is at about 3 weeks before parturition and at about parturition.

70.   (New) The method according to claim 57, wherein the immunizing the animals at least once before the onset of the stress is at about 8 weeks before parturition and the immunizing the animals at least once during the stress is at about 3 weeks before parturition, at about parturition and at about 3 weeks after parturition.